

REMARKS

Claims 1-11 are all the claims pending in the application.

I. Information Disclosure Statement

The Examiner has returned a signed and initialed copy of the Form PTO/SB/08 A & B (modified) filed with the Information Disclosure Statement on May 17, 2005. The Examiner has crossed out EP 0 881 306 and EP 0 725 156. However, upon review of PAIR, both of these references were submitted on May 17, 2005.

Accordingly, it is respectfully requested that the Examiner indicate that the references have been considered and made of record.

II. Rejoinder of Claims 6-11

Claims 6-11 are process claims which depend from claim 1. Accordingly, Applicants respectfully request rejoinder of process claims 6-11 upon allowance of the product claims.

III. Rejection of Claims 1-5 under 35 U.S.C. § 103(a)

Claims 1-5 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Vander Voort (US 4,171,233) or Bhadeshia (WO 96/22396).

Applicants respectfully traverse the rejection.

Claim 1 is directed to a weldable component of structural steel, characterized in that its chemical composition comprises, by weight:

$$0.40\% \leq C \leq 0.50\%$$

$$0.50\% \leq Si \leq 1.50\%$$

$$0\% \leq Mn \leq 3\%$$

$$0\% \leq Ni \leq 5\%$$

$$0\% \leq Cr \leq 4\%$$

$$0\% \leq Cu \leq 1\%$$

$$0\% \leq \text{Mo} + \text{W}/2 \leq 1.5\%$$

$$0.0005\% \leq \text{B} \leq 0.010\%$$

$$\text{N} \leq 0.025\%$$

$$\text{Al} \leq 0.9\%$$

$$\text{Si} + \text{Al} \leq 2.0\%$$

optionally at least one element selected from V, Nb, Ta, S and Ca, at contents of less than 0.3%, and/or from Ti and Zr at contents of less than or equal to 0.5%, the remainder being iron and impurities resulting from the production operation. The contents of aluminum, boron, titanium and nitrogen, expressed in thousandths of %, of the composition also satisfying the following relationship:

$$\text{B} \geq \frac{1}{3} \times \text{K} + 0,5 \quad (1)$$

$$\text{with K} = \text{Min}(\text{I}^* ; \text{J}^*)$$

$$\text{I}^* = \text{Max}(0 ; \text{I}) \quad \text{and} \quad \text{J}^* = \text{Max}(0 ; \text{J})$$

$$\text{I} = \text{Min}(\text{N} ; \text{N} - 0,29(\text{Ti} - 5))$$

$$\text{J} = \text{Min}\left(\text{N} ; 0,5\left(\text{N} - 0,52 \text{ Al} + \sqrt{(\text{N} - 0,52 \text{ Al})^2 + 283}\right)\right),$$

and whose structure is bainitic, martensitic or martensitic-bainitic and also comprises from 3 to 20% of residual austenite. A main feature of the present invention is the synergy between boron and silicon. *See e.g.*, page 4, lines 19-24 of the present specification.

It is respectfully submitted that neither Vander Voort nor Bhadeshia render the present invention obvious.

Vander Voort describes a steel for molds that can contain boron, however, when it does contain boron, the silicon content is limited. *See* the formula related to surface roughness, col.

10, lines 8-15; Tables IV and V; col. 5, lines 29-59. Moreover, Vander Voort does not consider weldability of the steel.

Bhadeshia describes a steel for rails having good weldability due to the structure, which is bainitic after air cooling. *See* page 6, second paragraph. This steel is able to be used to produce parts having special structures. However, the carbon content is less than 0.5%, or better yet, less than 0.35%. *See* page 8, Table 1 and the following paragraph. Furthermore, boron is only optional. *See e.g.*, claims 1 and 2 or claims 8 or 9. Moreover, Bhadeshia does not give any indication concerning a possible advantage resulting from simultaneous contents of boron and high content of silicon.

For at least the above reasons, it is respectfully submitted that the present invention is not taught or suggested by the cited references, and that the present invention would not be obvious to one of ordinary skill in the art.

In addition, claims 2-5 depend from claim 1, and thus it is respectfully submitted that these claims are patentable for at least the same reasons as claim 1.

In view of the above, withdrawal of the rejection is respectfully requested.

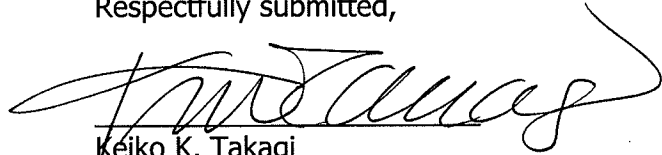
IV. Conclusion

For the foregoing reasons, reconsideration and allowance of claims 1-11 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Keiko K. Takagi', written over a horizontal line.

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